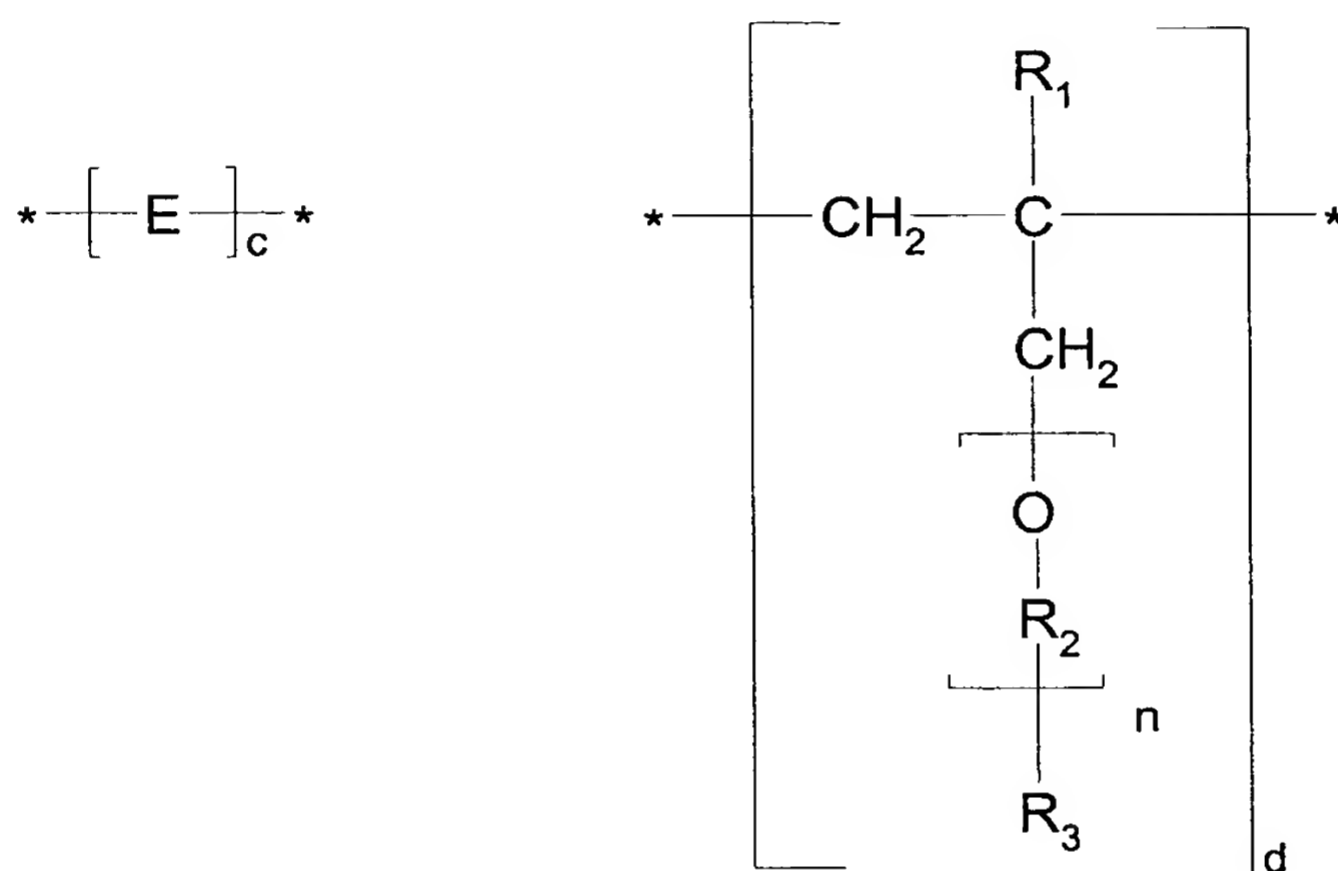


CLAIMS

1. Method of treating a semi-permeable filter membrane of the type that separates a dissolved or dispersed material from a liquid carrier medium that is brought into contact with said membrane, said method comprising contacting said liquid carrier medium with an effective amount of a treatment agent comprising repeat units having the formula:

Formula I



wherein E is a repeat unit remaining after polymerization of ethylenically unsaturated monomer; R₁ is hydrogen or C₁-C₄ alkyl; R₂ is C₁-C₆ alkyl, C₁-C₆ alkylene, di-hydroxy substituted C₁-C₆ alkyl, di-hydroxy substituted C₁-C₆ alkylene, aryl, or mixtures thereof; n is 0 to about 100; R₃ is OH, SO₃Z, OSO₃Z, PO₃Z₂, OPO₃Z₂, CO₂Z, or mixtures thereof; Z is hydrogen or a water-soluble cation; and the mole ratio c:d ranges from about 30:1 to 1:20, respectively.

2. Method as recited in claim 1 wherein said liquid carrier medium comprises water and said treatment is added to said water in an amount of about 1-10,000 ppm based upon one million parts of said water.

3. Method as recited in claim 2 wherein said treatment is added in an amount of about 1-2,000 ppm.
4. Method as recited in claim 1 wherein [E] is a repeat unit remaining after polymerization of acrylic acid or water soluble salt thereof.
5. Method as recited in claim 4 wherein R_1 is hydrogen, R_2 is $-\text{CH}_2\text{CH}_2-$, n is 1 to about 20, R_3 is OH, SO_3Z , or OSO_3Z , or mixtures thereof; Z is hydrogen or a water soluble cation such as Na, K, or NH_4 , and the mole ratio $c:d$ ranges from about 15:1 to 1:10.
6. Method as recited in claim 5 wherein R_1 is hydrogen, R_2 is $-\text{CH}_2-\text{CH}_2-$; n is about 5 to about 20; R_3 is OSO_3Z , Z is hydrogen or a water soluble cation such as Na, K, or NH_4 , and the mole ratio of $c:d$ ranges from about 15:1 to 2:1.
7. Method as recited in claim 1 comprising spraying or pouring an aqueous solution or dispersion containing said treatment agent on said membrane or immersing said membrane in an aqueous solution containing said treatment agent.
8. Method as recited in claim 1 wherein said membrane is a polyamide R.O. membrane.
9. Method as recited in claim 2 wherein said water comprises Ca cations in amounts sufficient to form calcium containing scale in the absence of addition of said treatment agent, and wherein said treatment agent inhibits the formation of said scale along a surface of said membrane.
10. Method as recited in claim 9 wherein said scale is calcium phosphate.

11. Method as recited in claim 10 wherein said treatment agent is a member selected from the group consisting of AA/APES; AA/PEGAE, AA/1-allyloxy-2,3 propanediol, and mixtures thereof.
12. Method as recited in claim 11 wherein said treatment agent is AA/APES.
13. Method as recited in claim 11 wherein said treatment agent is AA/PEGAE.